Amendments to Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(currently amended) A method of ~~depositing~~ optimizing the optical characteristics of silica films, wherein said silica films are ~~an optical quality silica film on a substrate, wherein said optical quality silica film is~~ deposited ~~on said substrate~~ by plasma enhanced chemical vapor deposition (PECVD) at temperature between 100 and 650°C in the presence of a silicon-containing gas, an oxygen-containing gas, and a carrier gas, each said gas having a flow rate, comprising:

a) ~~fixing~~ setting the flow rates of said silicon-containing gas, ~~an~~ said oxygen-containing gas, and said carrier gas at respective predetermined fixed values;

b) depositing silica films ~~on said substrate~~ at different total deposition pressures of said gases between 2.0 and 2.6 Torr at said predetermined fixed values;

c) subjecting the deposited silica films to a low temperature treatment between 400° to 1200°C to minimize the presence of contaminant compounds in said film;

~~c~~d) observing the ~~optical~~ FTIR characteristics of the deposited silica films to determine the optimum total deposition pressure; and

~~d~~e) depositing ~~said optical quality~~an optimized silica film ~~while~~ by controlling said total deposition pressure to said optimum total deposition pressure determined in step *d e*; ~~and~~

~~e) subjecting said deposited optical quality silica film to a low temperature treatment between 400° to 1200°C to minimize the presence of contaminant compounds in said film~~.

2.(currently amended) A method as claimed in claim 1, wherein said total deposition pressure is selected to minimize the presence of Si-O_x-H_y-Nz compounds ~~after said low temperature treatment~~as evidenced by said FTIR characteristics.

3.(original) A method as claimed in claim 2, wherein said low temperature treatment is about 800°C.

4.(cancelled)

5.(cancelled)

6. (currently amended) A method as claimed in claim1, wherein said silica films ~~is~~ are deposited in a vacuum chamber whose pressure is maintained by a vacuum pump having a controllable pumping speed, and said total ~~gas~~ deposition pressure is maintained by controlling said pumping speed.

7. (cancelled)

8.(currently amended) A method as claimed in claim ~~7~~1, wherein said silica films ~~is~~ are deposited at a temperature of about 400°C.

9.(cancelled)

10.(previously presented) A method as claimed in claim 1, wherein said silicon-containing gas is selected from the group consisting of: silicon tetra-chloride, $SiCl_4$, silicon tetra-fluoride, SiF_4, disilane, Si_2H_6, dichloro-silane, SiH_2Cl_2, and difluoro-silane, SiH_2F_2.

11.(previously presented) A method as claimed in claim 10, wherein said oxygen-containing gas is selected from the group consisting of: oxygen, O_2, nitric oxide, NO_2, water, H_2O, hydrogen peroxide, H_2O_2, carbon monoxide, CO and carbon dioxide, CO_2.

12.(currently amended) A method as claimed in claim 11, wherein said carrier gas is selected from the group consisting of: helium, He, neon, Ne, argon, Ar ~~or~~ and krypton, Kr.

13.(previously presented) A method as claimed in claim 1 wherein said silicon-containing gas is SiH_4, said oxygen-containing gas is N_2O, and said carrier gas is N_2.

14.(currently amended) A method as claimed in claim 1, wherein the predetermined fixed values for the flow rates of said gases are selected to optimize the quality of the deposited films after said low temperature treatment.

15.(currently amended) A method as claimed in claim 13, wherein the predetermined fixed values of the flow rates of said gases are selected to optimize the quality of the deposited films after said low temperature treatment.

16.(original) A method as claimed in claim 15, wherein the flow rate of the SiH_4 is about 0.2 std liter/min.

17.(original) A method as claimed in claim 16, wherein the flow rate of the N_2O is about 6.00 std liter/min.

18.(original) A method as claimed in claim 17, wherein the flow rate of the N_2 is about 3.15 std liter/min.

19.(currently amended) A method as claimed in claim 1, wherein modifiers are incorporated into said silica films during deposition to modify the resulting refractive index.

20.(currently amended) A method as claimed in claim 19, wherein said modifiers are selected from the group consisting of: Phosphorus, Boron, Germanium, Titanium ~~or~~ and Fluorine.

21.(currently amended) A method of depositing an optical quality silica film on a substrate wherein said optical quality silica film is deposited on said substrate at a temperature between 100 and 650°C by plasma enhanced chemical vapor deposition (PECVD) in the presence of a silicon-containing gas, an oxygen-containing gas, and a carrier gas, each said gas having a flow rate, comprising:

a) fixing the flow rate of said silicon-containing gas, an oxygen-containing gas, and said carrier gas at ~~predetermined values~~about 0.2 std liter/min, 6.0 std liter/min., and 3.15 std. liter/min respectively;

~~while controlling the total pressure of said gases to a pressure of between 2.0 to 2.6 Torr; and~~

b) depositing the silica films on said substrate at ~~different~~ a total deposition pressures of ~~said gases between 2.0 and 2.6~~about 2.4 Torr;

~~c) observing the optical characteristics of the deposited silica films to determine the optimum total deposition pressure;~~

~~d) depositing said optical quality silica film while controlling said total deposition pressure to said optimum total deposition pressure determined in step c;~~ and

ec) subjecting said deposited ~~optical quality~~ silica film to a low temperature

treatment at about 800°C to minimize the presence of $Si\text{-}O_x\text{-}H_y\text{-}Nz$ compounds ~~after said low temperature treatment.~~

22.(currently amended) A method as claimed in claim 21, wherein said silica film is deposited in a vacuum chamber whose pressure is maintained by a vacuum pump having a controllable pumping speed, and said total ~~gas~~ deposition pressure is maintained by controlling said pumping speed.

23.(currently amended) A method as claimed in claim 21, wherein said silica film is deposited at a temperature of about 400°C.

24.(previously presented). A method as claimed in claim 21, wherein said silicon-containing gas is SiH_4, said oxygen-containing gas is N_2O, and said carrier gas is N_2.

25.(canceled)

26. (canceled)

27. (canceled)